



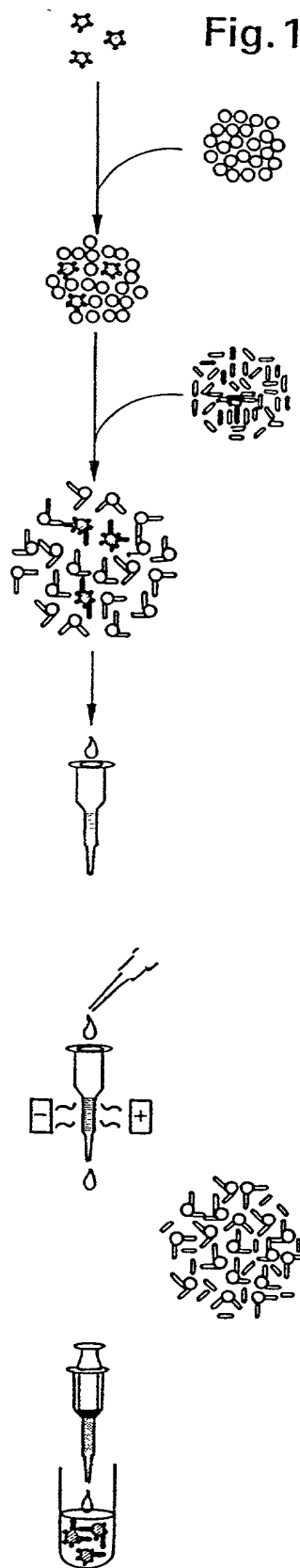
1. couple magnetic beads (-) to antigen-positive cells (⊗)
2. add excess antigen-negative cells (○)
3. add phage library containing specific  and non-specific  binders
4. incubate
5. load on column without magnetic field
6. place column in magnetic field and wash away antigen-negative cells and non-specific phage
7. flush antigen-positive cells and bound phage from column, elute bound phage, infect bacterial culture

Fig. 1



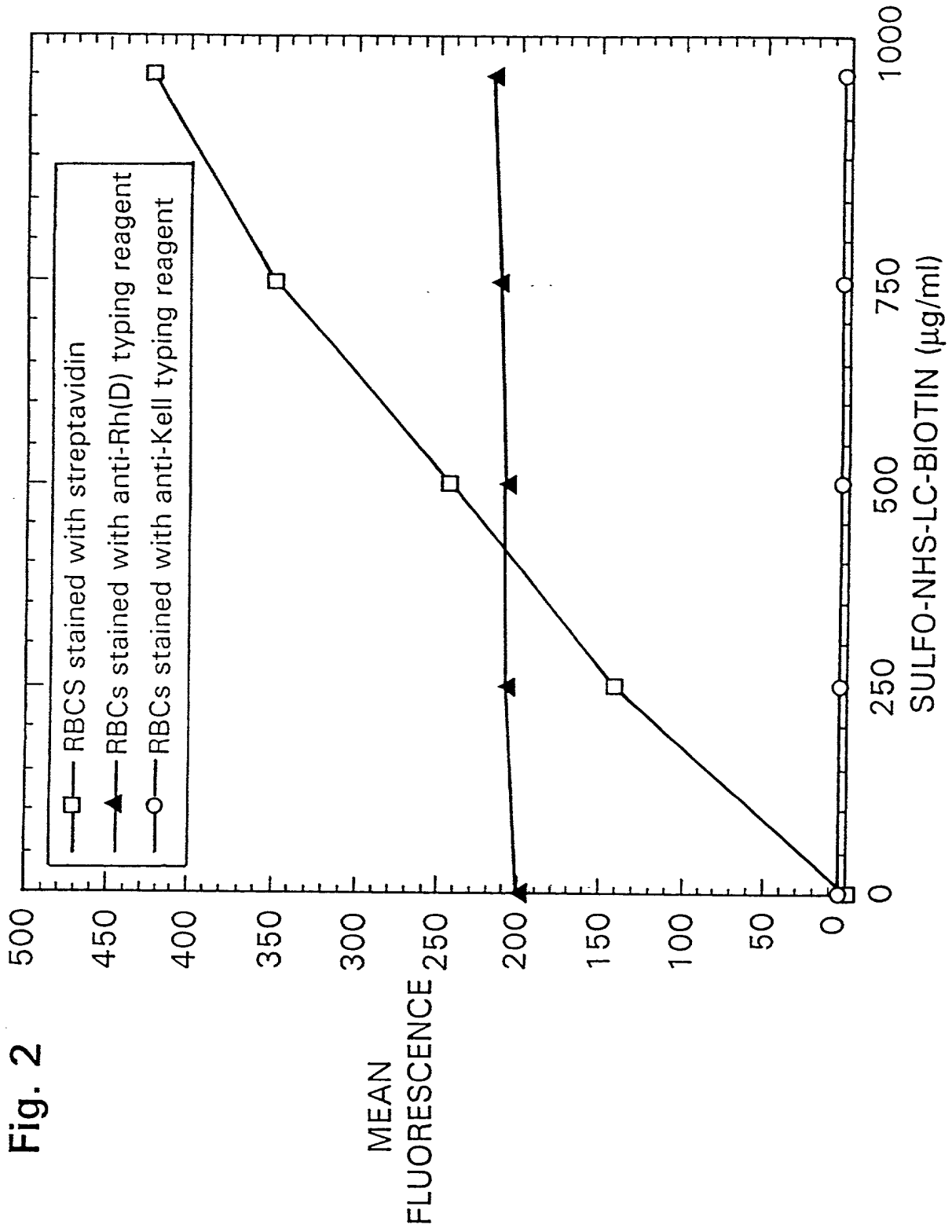


Figure 3a ^{3/42}

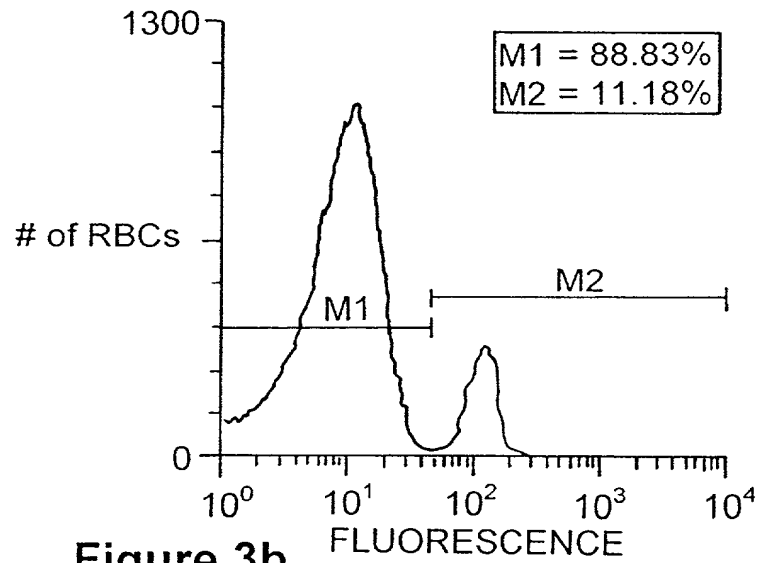


Figure 3b

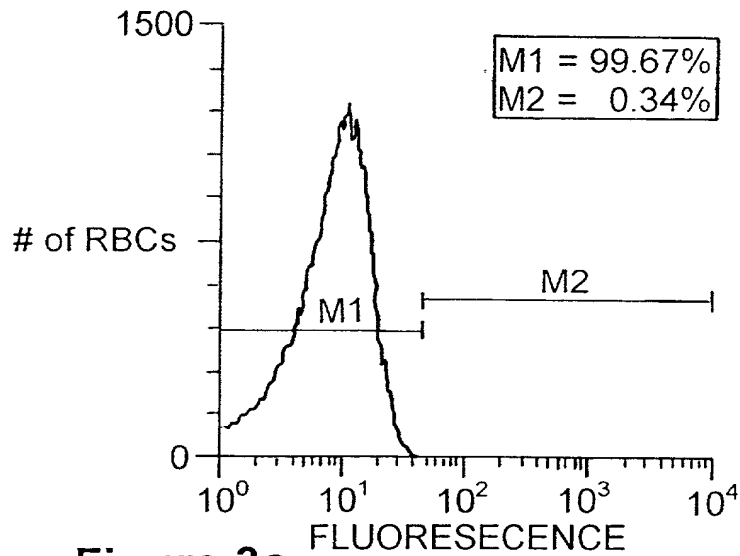
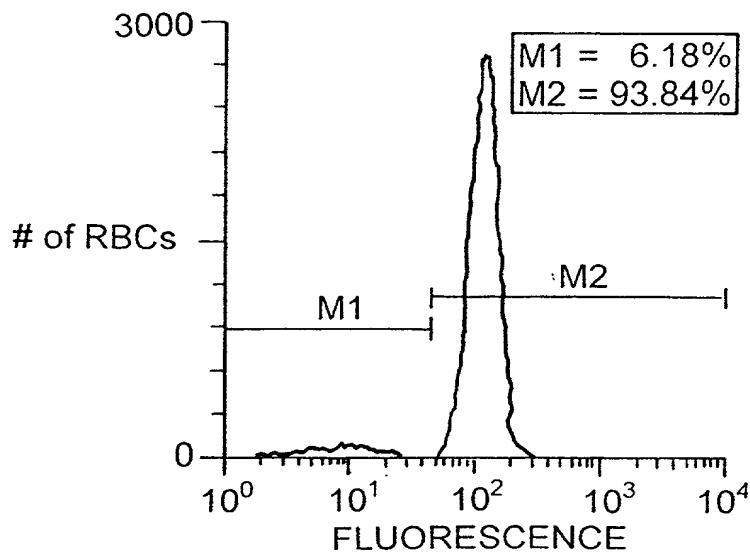


Figure 3c



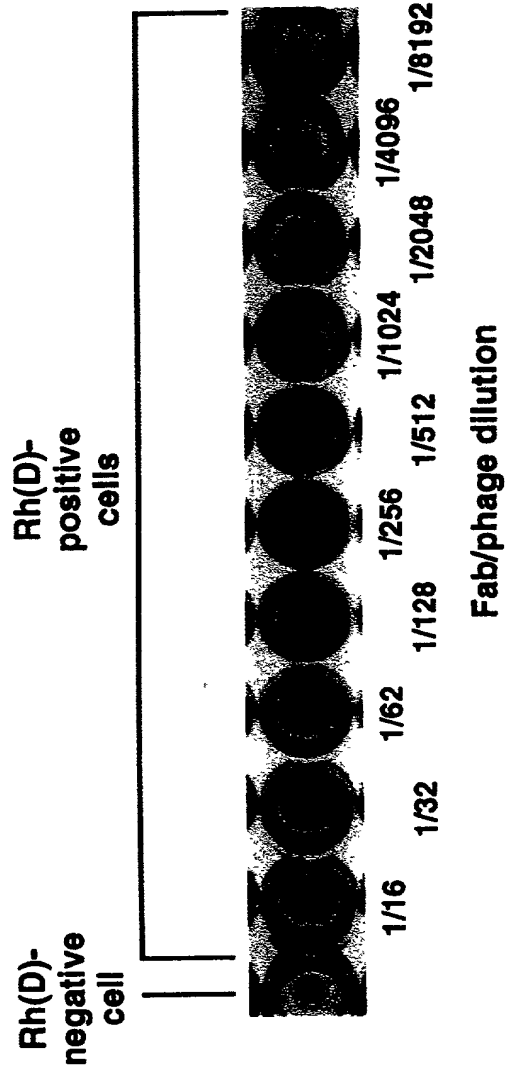


FIG. 4

5/42

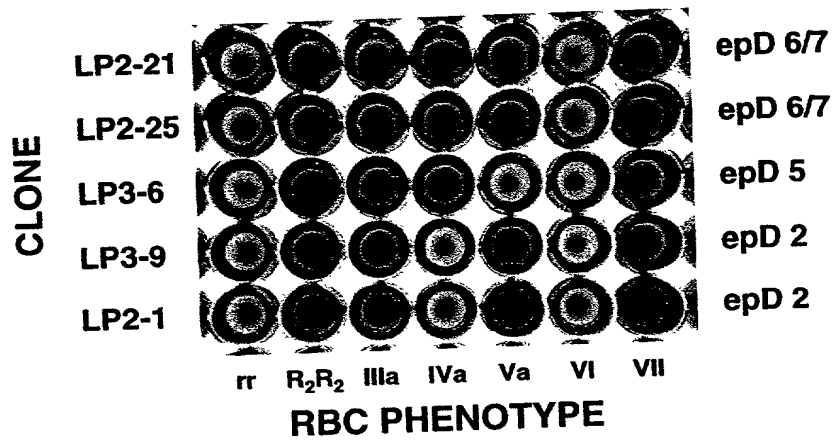


FIG. 5

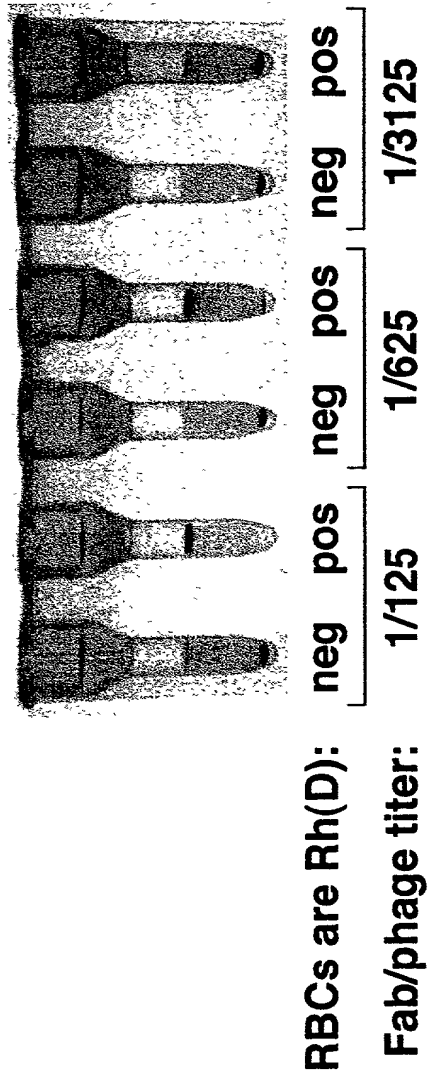
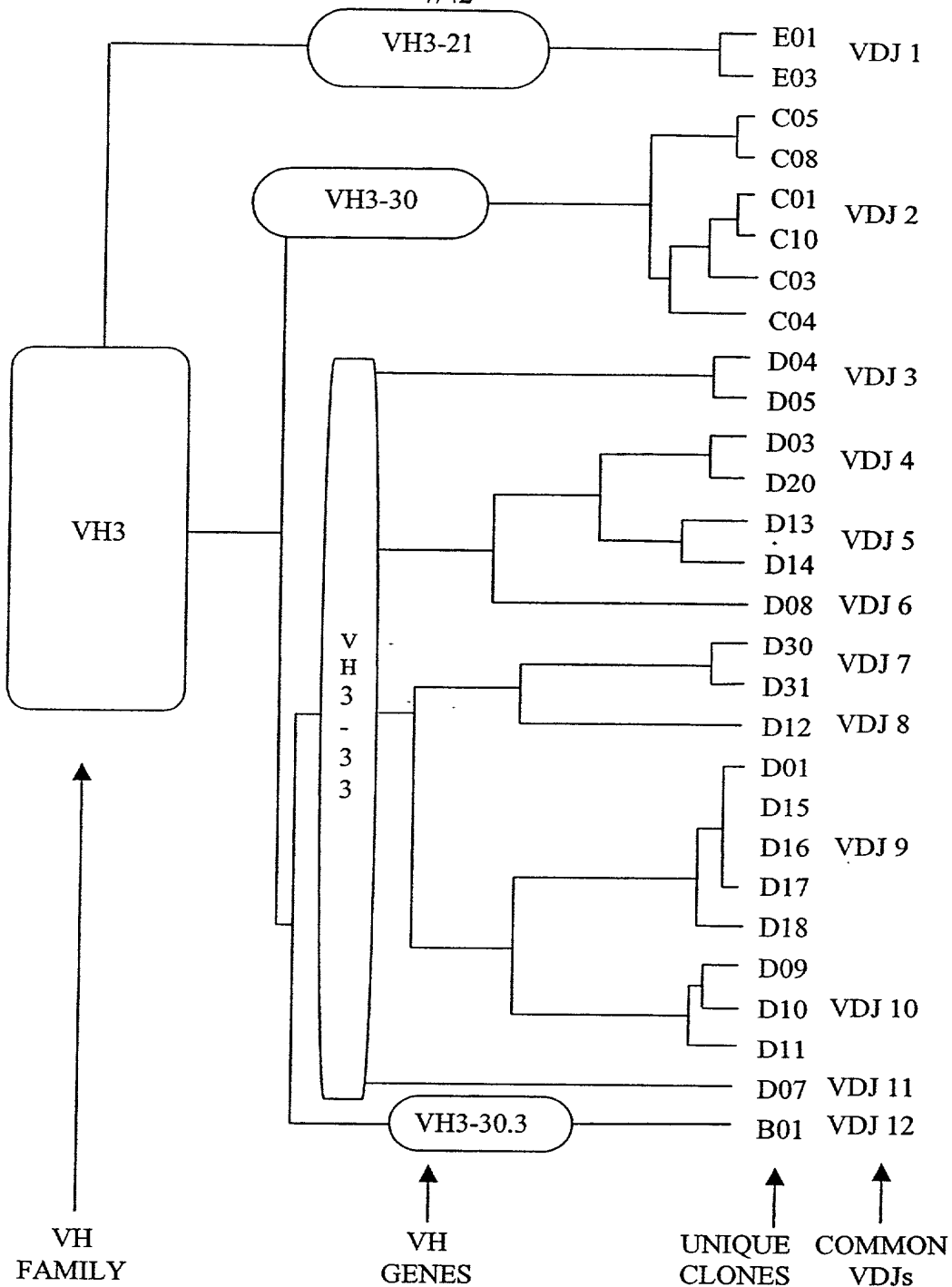


FIG. 6



CAR DSRYSNFLRWVR-SDGMDV WGQG E01
 CAR DSRYSNFLRWVR-SDGMDV WGQG E03
 CAN LRGEVTRRASVP----LDI WGQG C05
 CAN LRGEVTRRASVP----LDI WGQG C08
 CAN LRGEVTRRASVP----FDI WGPG C01
 CAN LRGEVTRRASVP----FDI WGPG C10
 CAN LRGEVTRRASVP----FDI WGPG C03
 CAN LRGEVTRRASIP----FDI WGQG C04
 CAR DWR-VRAFS-SGWLSAFDI WGQG D04
 CAR DWR-VRAFS-SGWLSAFDI WGQG D05
 CAR EEV-VR--GVILWSRKFDY WGQG D03
 CAR EEV-VR--GVILWSRKFDY WGQG D20
 CAR ENV-ARGGGGVRYKYYFDY WGQG D13
 CAR ENV-ARGGGGIRYKYYFDY WGQG D14
 CAR DQ---RAAAGIFYYSRMDV WGQG D08
 CAR ERN-FR-SGYSRYYYGMDV WGPG D30
 CAR ERN-FR-SGYSRYYYGMDV WGPG D31
 CAR EAS-ML-RGISRYYYAMDV WGPG D12
 CAR ENQ-IK-L-WSRYLYYFDY WGQG D01
 CAR ENQ-IK-L-WSRYLYYFDY WGQG D15
 CAR ENQ-IK-L-WSRYLYYFDY WGQG D16
 CAR ENQ-IK-L-WSRYLYYFDY WGQG D17
 CAR ENQ-IK-L-WSRYLYYFDY WGQG D18
 CAR EGS-KK-VALSRYYYYMDV WGQG D09
 CAR EVS-KK-VALSRYYYYMDV WGQG D10
 CAR EVS-KK-LALSRYYYYMDV WGQG D11
 CAR ERR-EK--VYILFYSWLDR WGQG D07
 CAR GGFYYDSSGYGLRHYFDS WGQG B01

FIG. 7B

FIG. 8A-1

FIG. 8A

FIG. 8A-1	FIG. 8A-3
FIG. 8A-2	FIG. 8A-4

FIG. 8A-1

FIG. 8A-2

FIG. 8A-2

FR3		H3		FR4		# NUCLEOTIDE DIFFERENCES FROM GERMLINE VH
-----		-----		-----		
7		CDR3				
67890123456789012abc345678901234	.....8.....9.....	.....10.....	.....11.....	.....	.....
RFTISRDNKNTLYLQMNSLRAEDTAVYYCAR	.....*	567890abcdefghijk12	34567890123	WGQGT	TVTVSS	
.....*	.....*	DSRYSNFLR-WVRSD	.....I.....	.....	.....	6
.....*	.....*	DSRYSNFLR-WVRSD	.....I.....	.....	.....	8
RFTISRDNKNTLYLQMNSLRAEDTAVYYCAK	.....*	+++SIAAR+++++DAFDI	WGQGT	MTVTVSS		
.....K.....	.....P.....	LRGEVTRRAS---VP	.....	.....	.....	3
.....K.....	.....T.....	LRGEVTRRAS---VPL	.....	.....	.....	10
.....K.....	.....T.....	LRGEVTRRAS---VPL	.....	.....	.....	10
.....K.....	.....P.....	LRGEVTRRAS---VP	.....	.....	.....	9
.....K.....	.....P.....	LRGEVTRRAS---IP	.....	.....	.....	10
.....K.....	.....P.....	LRGEVTRRAS---VP	.....P.....	.....	.....	11
.....K.....	.....P.....	LRGEVTRRAS---VP	.....P.....	.....	.....	11
.....K.....	.....P.....	LRGEVTRRAS---VP	.....P.....	.....	.....	14
RFTISRDNKNTLYLQMNSLRAEDTAVYYCAR	.....*	+++++GYSSSWY+++DAFDI	WGQGT	MTVTVSS		
.....*	.....*	DWRVRAFSSGWL--S	.....	.....	.....	13
.....*	.....*	DWRVRAFSSGWL--S	.....	.....	.....	13
RFTISRDNKNTLYLQMNSLRAEDTAVYYCAR	.....*	ITMVRGVII+++++YFDY	WGQGT	LTVTVSS		
.....*	.....*	EEVVRGVILWSR--K	.....	.....	.....	7
.....*	.....*	EEVVRGVILWSR--K	.....	.....	.....	8
RFTISRDNKNTLYLQMNSLRAEDTAVYYCAR	.....*	+++++YFDY	WGQGT	LTVTVSS		
.....*	.....S.....	ENVARGGGG?RYKY-	.....	.....	.....	8
.....*	.....S.....	ENVARGGGGVYKY-	.....	.....	.....	11
.....*	.....S.....	ENVARGGGGIRYKY-	.....	.....	.....	13

FIG. 8A-3

```

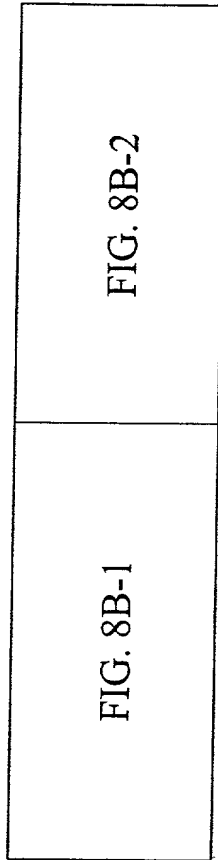
RFTISRDN SKNTLYLQMN SLRAEDTAVYYCAR +GIAAAG++Y YYYGMDV  WGQGT TVTVSS      15
..S.....*.....V.....D...*..... DQRAAG--IF**SR... ..
RFTISRDN SKNTLYLQMN SLRAEDTAVYYCAR YDFWSGYTY YYYGMDV  WGQGT TVTVSS
.....*.....*..D.....*..... ERNFRSGY--SR.....P.....11
.....*.....*..D.....*..... ERNFRSGY--SR.....P.....12
RFTISRDN SKNTLYLQMN SLRAEDTAVYYCAR +ITMVRGVII YYYGMDV  WGQGT TVTVSS      14
.....E.....VD...*..... EASMLRGI--SR...A... ..P.....
RFTISRDN SKNTLYLQMN SLRAEDTAVYYCAR ++WIQLWL+++ +YFDY  WGQGT TVTVSS      9
.....*.....*.....ENQIKLWSRYLY--..... ..
.....*.....*.....ENQIKLWSRYLY--..... ..10
.....*.....*.....ENQIKLWSRYLY--.....*..... ..10
.....*.....*.....ENQIKLWSRYLY--..... ..10
.....*.....*.....ENQIKLWSRYLY--..... ..10
.....*.....*.....ENQIKLWSRYLY--.....*..... ..10
.....*.....*.....ENQIKLWSRYLY--.....*..... ..12
RFTISRDN SKNTLYLQMN SLRAEDTAVYYCAR ++GYSSWY YYYGMDV  WGQGT TVTVSS      12
..V.....*.....*.....EVSKK?AL--SR...Y... ..*.....*.....12
..V.....*.....*.....EVSKKVAL--SR*.Y... ..*.....*.....13
..V.....*.....*.....EGSKKVAL--SR*.Y... ..*.....*.....13
..V.....*.....*.....EVSKKLAL--SR...Y... ..*.....*.....14
RFTISRDN SKNTLYLQMN SLRAEDTAVYYCAR ++++++ +NWFD P  WGQGT TVTVSS      23
..AV...K...*..F.....T.....I..... ERREKVILFY--S.L.R ..
RFTISRDN SKNTLYLQMN SLRAEDTAVYYCAR ++++++ +YFDY  WGQGT TVTVSS      8
.....F.....F.....GGFYDSSGGYGLRH...S ..

```

FIG. 8A-4

FIG. 8B-1

FIG. 8B



[illegible]

FIG. 8B-1

5.....6.....7.....8.....9.....	CHOTHIA
012ABC3456789012345 67890123456789012ABC345678901234	CLASS
S..S--SS.YI.....A..S.....	1-3
...--.....	1-3
..W.--.....	1-3
....--.....	1-3
VISY--DGSNKYYADSVKG RFTISRDN SKNTLYLQMN SLRAEDTAVYYCAR	

FIG. 8B-2

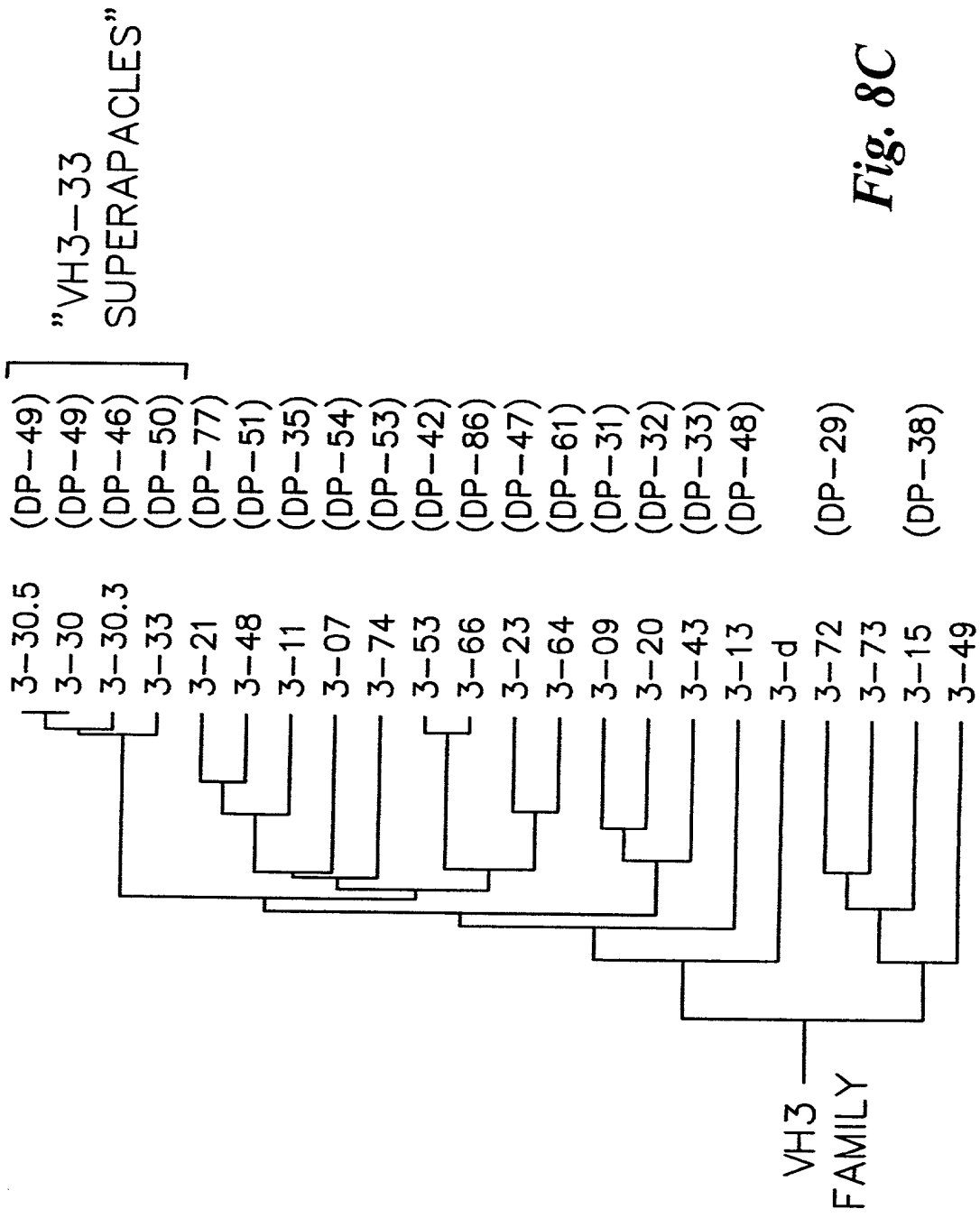


Fig. 8C

FIG. 9

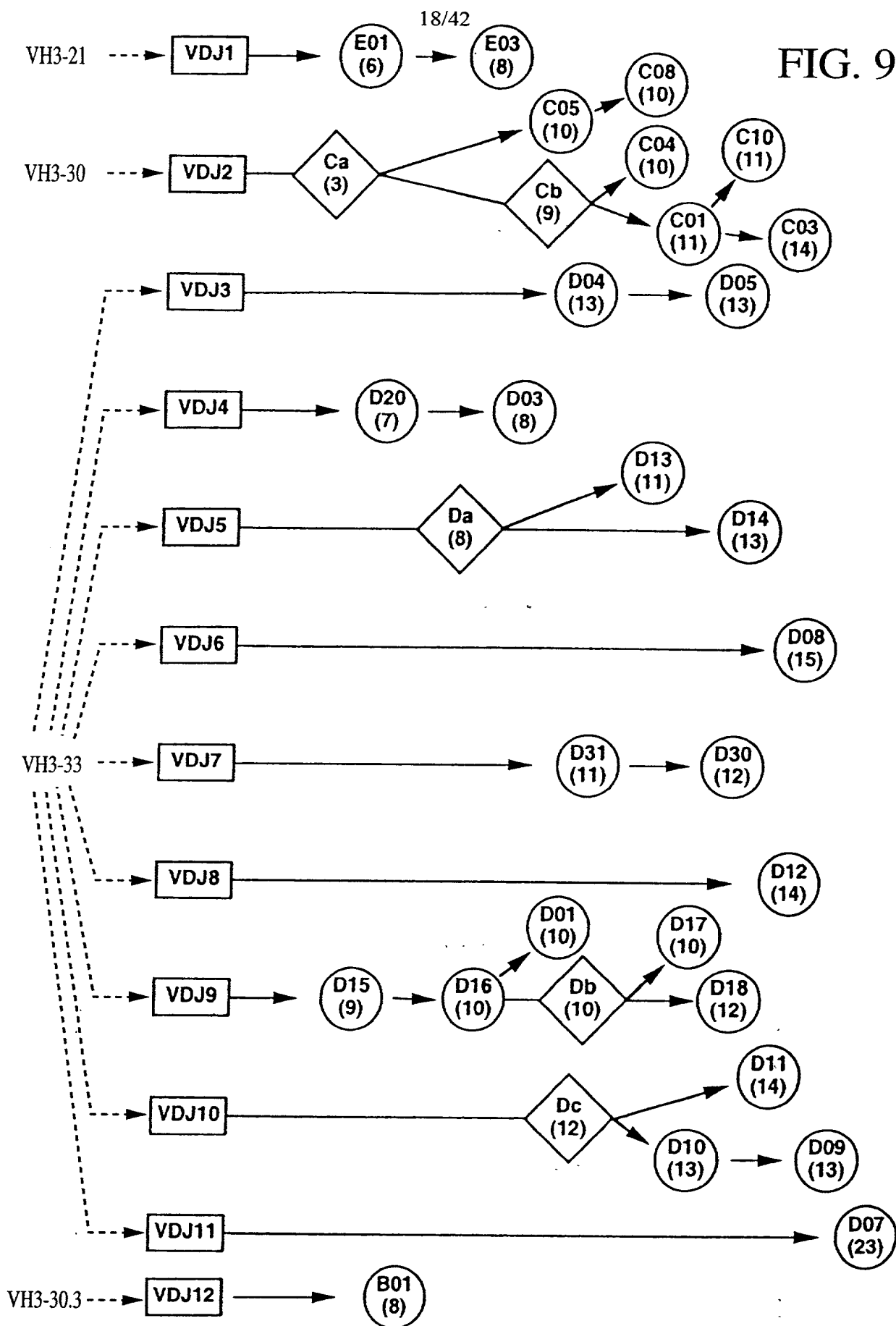


FIG. 10A-1

FIG. 10A

FIG. 10A-1	FIG. 10A-3
FIG. 10A-2	FIG. 10A-4

FR3	L3	FR4	# nucleotide differences from germline V κ
-----	-----	-----	
6.....7.....8.....9.....10.....			
78901234567890123456789012345678	9012345a67	89012345678	
GVPSRFGSGSGTDFTLTISSLPEDFATYYC	QQSYSTP+WT	FGQGTKVEIK	
.....T.....	.....-Q.....	.....	6
.....	*..SN.*-..	.....	11
.....	..TSA.*-..	.....	20
.....	.....L-..	.....	4
......**.*E.*.*.*.*.*.*.*.*.*.*	..TNDAL-..	.....*..VR	49
GVPSRFGSGSGTDFTLTISSLPEDFATYYC	QQSYSTP+YT	FGQGTKLEIK	
.....	.....P.....	.....	1
..L.....	.....P*S.....	.....	2
.....	.....G..-HS.....	..R.....	4
..P.....	..VRI*-S.....	.....	23
.....S.....	..LN.Y*-..	.....	11
.....*	..RE-----	.....	5
GVPSRFGSGSGTDFTLTISSLPEDFATYYC	QQSYSTP+FT	FGPGTKVDIK	
..T.....	.....-P.....	.....EM.	4
.....T.....*	.....-..	.....L.	13
GVPSRFGSGSGTDFTLTISSLPEDFATYYC	QQSYSTP+LT	FGGGTKVEIK	
.....	.....-R.....	.....	1

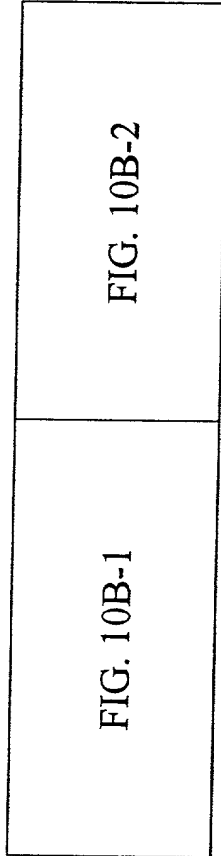
FIG. 10A-3

GVPSRFSGSGTGDTLTITISSLPEDFATYYC QQSYSTP+IT FGQGTRLEIK	4
.....*--	
GVPSRFSGSGSGTEFTLTITISSLPEDFATYYC QQLNSYP+FT FGPGTKVDIK	8
.....A...D.....N.*P..	
GVPSRFSGSGSGTEFTLTITISSLPEDFATYYC LQHSYP+WT FGQGTKVEIK	8
.....N.....S.....F*--	
GVPDRFSGSGSGTGDTLTIKISRVEAEDVGYYC MQALQTP+LT FGGGTKVEIK	8
.....N.....F--	

FIG. 10A-4

FIG. 10B is a schematic diagram of a system 1000 for providing a user with a user interface for a user interface.

FIG. 10B



WYQOKPGKAPKLLIY AASSLQS GVPSRFGSGSGTDFTLTISSLOPEDFATYYC QQSYSTP

.....T... ..E..... ..LN.Y.
.....R... ..E..... ..L.HN.Y.
..L....QS.Q.... LG.NRA. ...D.....K..RVEA..VGV... M.ALQ...

FIG. 10B-2

FIG. 11A

FIG. 11A-1	FIG. 11A-3
FIG. 11A-2	FIG. 11A-4

FIG. 11A-1

CDR2	FR3	CDR3	FR4	# nucleotide differences from germline Vλ
5.....	6.....7.....8.....	9.....	10.....	
01abcd23456	789012345678ab90123456789012345678	9012345abcdef67	8901234567	
ST----SNKHS	WTPARFSGSLLG--GKAALTLSGVQPEDEAEFYC	LLYYGGAQ++++VV	FGGGTKLTVL	
A-----	-----	...S.W-----*	.....*	7
A-----	-----	...S.W-----*	.....*	7
GS----N....	-----*	F.A.W-----A	...W.....	12
EV----SKRPS	GVPDRFSGSKSG--NTASLTVSGLQAEDEADYYC	SSYAGSNNF++++VV	FGGGTKLTVL	
.G----T....	-----	.F.*NS-----VI	.....	17
EG----SKRPS	GVSNRFGSKSG--NTASLTISGLQAEDEADYYC	CSYAGSSTF++++VV	FGGGTKLTVL	
.....	.....R.....	...I.-----RI	.....	10
GN----SNRPS	GVPDRFSGSKSG--TSASLAITGLQAEDEADYYC	QSYDSSLSG++++VV	FGGGTKLTVL	
.....	-----	...P--Y..	.....	3
.....H....	-----	...N...S--S*F	.....	10
ND----N....	-----	*R-----*	.....	13
DN----NKRPS	GIPDRFSGSKSG--TSATLGITGLTGDEADYYC	GTWDSSLSA++++VV	FGGGTKLTVL	
.....	-----	.....GRVRRM	.....*	2
.....YR...	*-----	*A...D..NG---R*	.....	15

FIG. 11A-3

```

RN---NQRPS  GVPDRFSGSKSG--TSASLAISGLRSEDEADYYC  AAWDDSLG++++VV  FGGGTKLTVL
.-----
.-----
N.-----**.*  L.....-A.....N.....D.....TG...R.*-----LI  .P*V...
3
6
23

SN---NQRPS  GVPDRFSGSKSG--TSASLAISGLQSEDEADYYC  AAWDDSLNG++++VV  FGGGTKLTVL
.-----K...
*.-----G...
T.-----G.*  S.....R*.A.D....
.-----
.-----T.V.T...TG*.*...GT..H.RS.-----A*
8
18
14
18

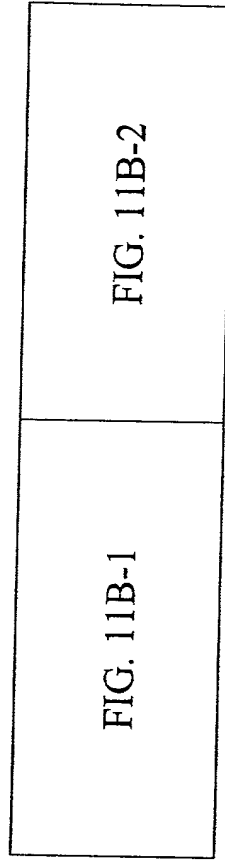
GK---NNRPS  GIPDRFSGSSSG--NTASLTITGAQAEDEADYYC  NSRDSSGNH++++VV  FGGGTKLTVL
.R-----
.R-----G.....*--Q..A...*T.*
AR---*S...  N...-T...A..R.....H...N.H.-----R*
.-----S...
ED---SKRPS  GIPERFSGSSSG--TMATLTISGAQVEDEADYYC  YSTDSSGNH++++VV  FGGGTKLTVL
*.-----K...P  .....*T...-T...S.....*.....*..R.N..DQ---RR*  .A.....
41

LNSDGSKSGD  GIPDRFSGSSSG--AERYLTISLQSEDEADYYC  QTWGTGI++++VV  FGGGTKLTVL
VTN..R.I...  .....A...-S...S.G.....G*...M-----H*
38

```

FIG. 11A-4

FIG. 11B

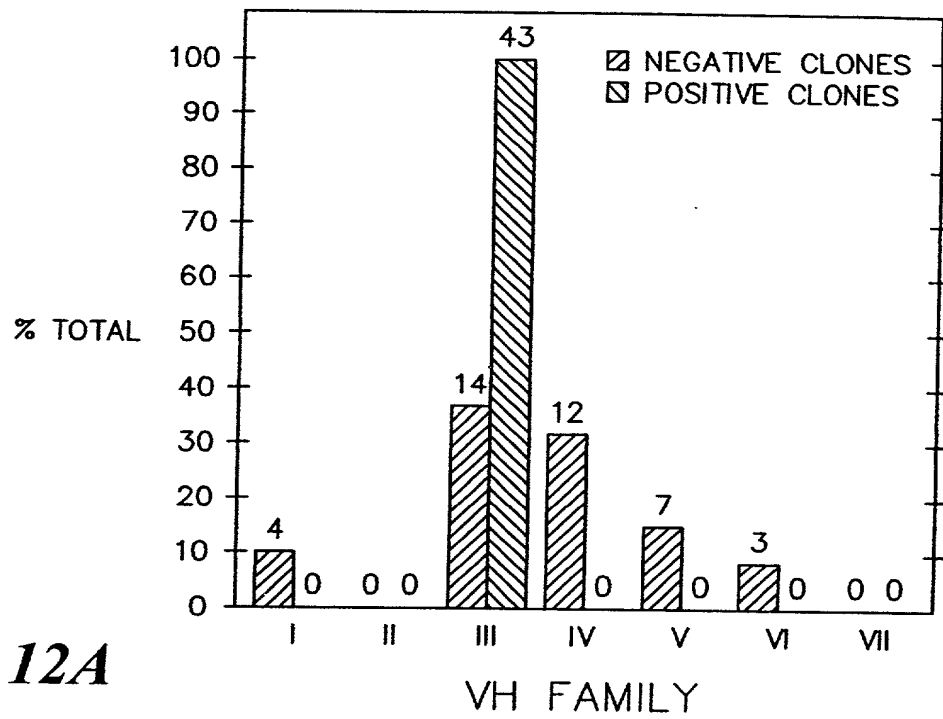
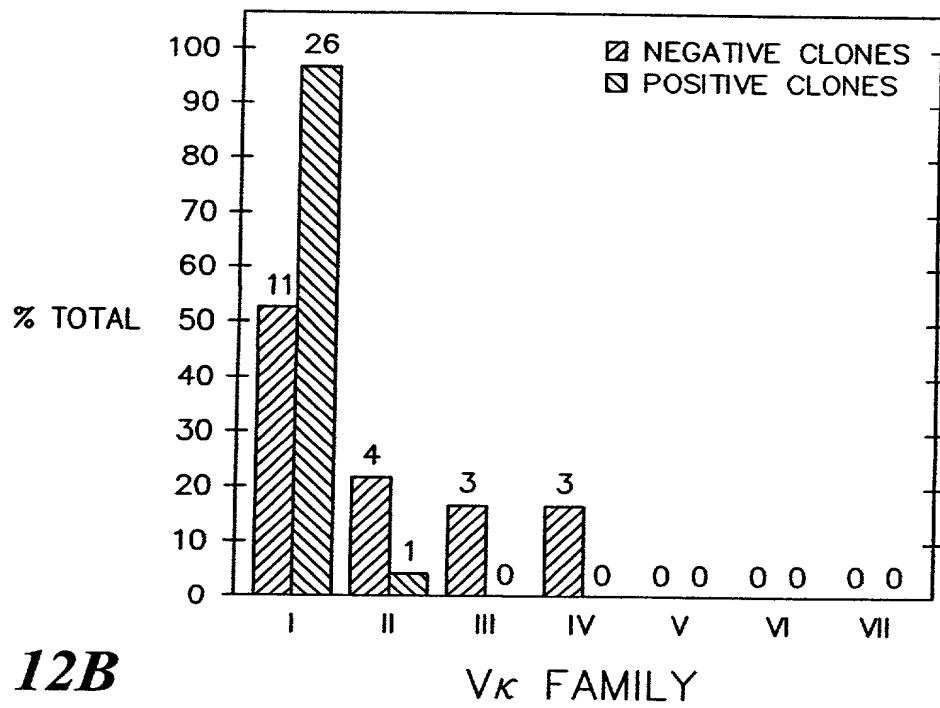


V λ		
GENE	FAM.	
7a.2.3/DPL18	VII	QTVVTQEPSTLVSPGGTVTLTC
2c.118D9+	II	QSALTQPPSASGSPGQSVTISC
DPL10/1v2066	II	QSALTQPASVSGSPGQSITISC
DPL7/VL1.2	I	QSVVTQPPSVSGAPGQRTVISC
1b.366F5/DPL5	I	QSVLTQPPSVSAAPGQKVTISC
1g.400B5/DPL3	I	QSVLTQPPSASGTPGQRTVISC
1c.10.2/DPL2	I	QSVLTQPPSASGTPGQRTVISC
DPL16/VL3.1	III	SSELTQDPASVALGQTVRITC
3p.81A4+	III	SYELTQPPSVSVSPGQTARITC
4b.68B6	IV	QLVLTQSPSASASLGASVKLTC
		ASSTGAVTSGYYPN
		TGTSSDVGGYNYVS
		TGTSSDVGSYNLVS
		TGSSSNIGAGYDVH
		SGSSSNIGNNY-VS
		SGSSSNIGSNY-VY
		SGSSSNIGSNT-VN
		QGDSLR--SYYAS
		SGDALP---KKYAY
		TLSSG--HSSYAIA

FIG. 11B-1

WFOQKPGQAPRALIY ST-----SNKHS WTPARFSGSLLG--GKAALTLSGVQPEDEAEYVC LLYYGGAQ
 WYQQHPGKAPKLMYIY EV-----SKRPS GVPDRFSGSKSG--NTASLTVSGLQAEDEADYVC SSYAGSNNF
 WYQQHPGKAPKLMYIY EG-----SKRPS GVSNRFGSKSG--NTASLTI SGLQAEDEADYVC CSYAGSSTF
 WYQQLPGTAPKLLIY GN-----SNRPS GVPDRFSGSKSG--TSASLAI TGLQAEDEADYVC QSYDSSLG
 WYQQLPGTAPKLLIY DN-----NKRPS GIPDRFSGSKSG--TSATLGITGLQTGDEADYVC GTWDSLSA
 WYQQLPGTAPKLLIY RN-----NQRPS GVPDRFSGSKSG--TSASLAI SGLRSEDEADYVC AAWDDSLG
 WYQQLPGTAPKLLIY SN-----NQRPS GVPDRFSGSKSG--TSASLAI SGLQSEDEADYVC AAWDDSLNG
 WYQKPGQAPVLVIY GK-----NNRPS GIPDRFSGSSSG--NTASLTI TGAQAEDEADYVC NSRDSSGNH
 WYQKSGQAPVLVIY ED-----SKRPS GIPERFSGSSSG--TMA TLTISGAQVEDEADYVC YSTDSSGNH
 WHQQQPEKGPRLMK LNS-DGSHSKGD GIPDRFSGSSSG--AERYLTIS SLSQSEDEADYVC QTWGTGI

FIG. 11B-2

**Fig. 12A****Fig. 12B**

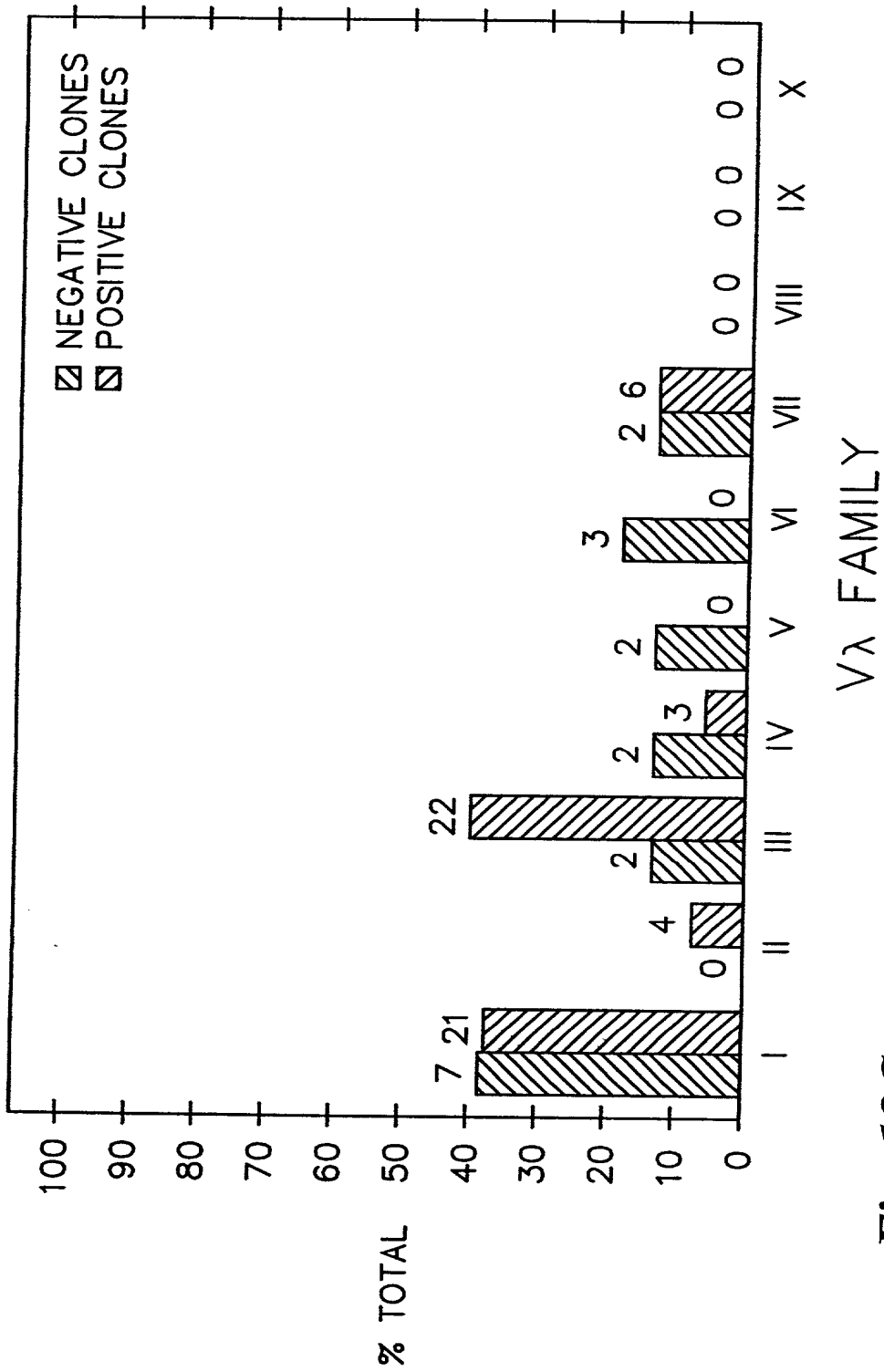
































Fig. 12C

CLONE (HC/LC)	Rh(D)VARIANT CATEGORY						ASSIGNED EPITOPE
	IIIc	IVa	IVb	Va	VI	VII	
E1/L4							epD1
E1/M2							epD2
E1/M3							epD3
D20/K3							epD6/7
D7/J4							"epDX"

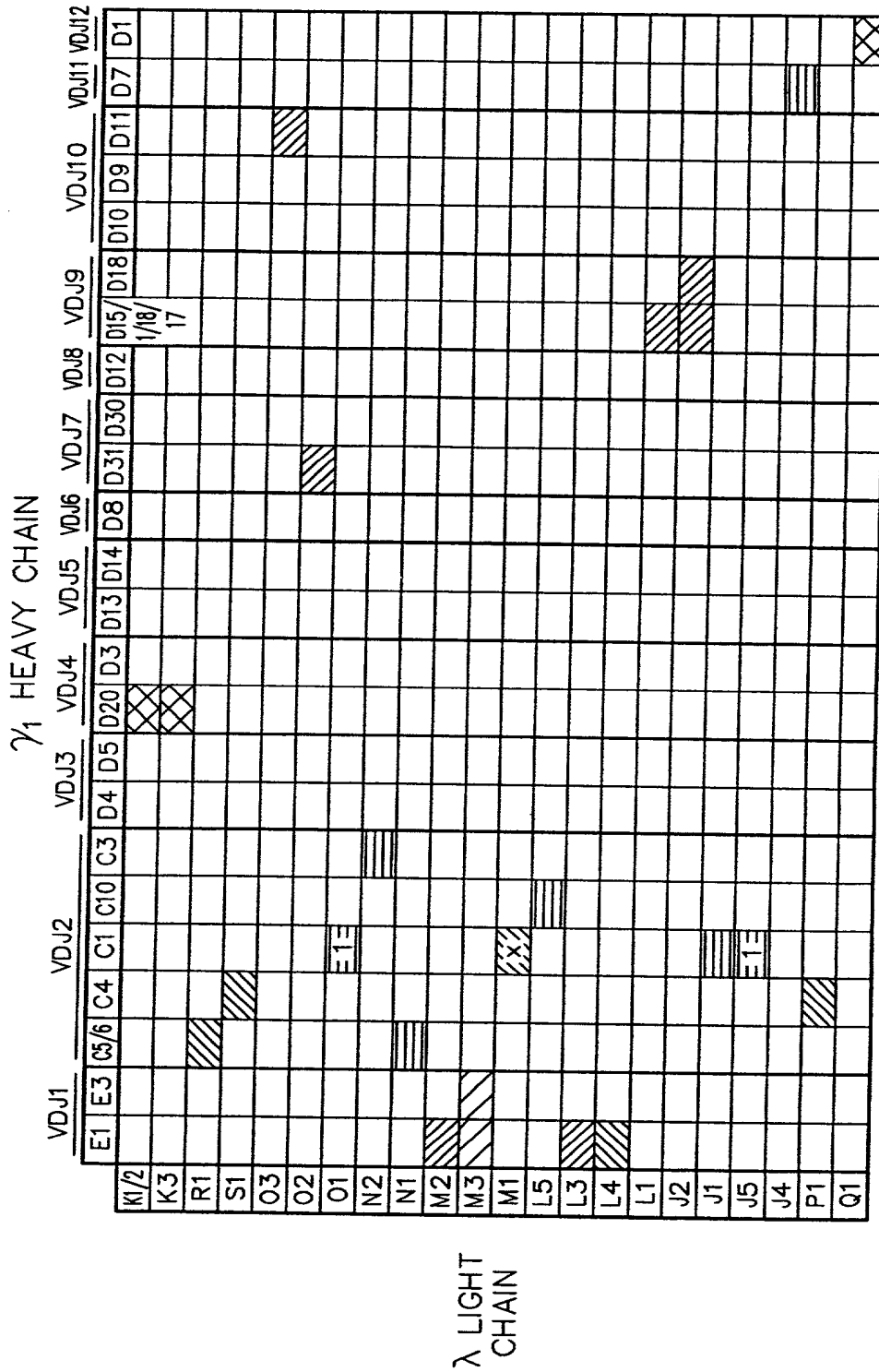


Fig. 14A

κ LIGHT CHAIN

γ₁ HEAVY CHAIN

	VDJ1			VDJ2			VDJ3		VDJ4		VDJ5		VDJ6		VDJ7		VDJ8		VDJ9		VDJ10		VDJ11		VDJ12	
	E1	E3	C5/6	C4	C1	C10	C3	D4	D5	D20	D3	D13	D14	D8	D31	D30	D12	D15/ 1/18/ 17	D18	D10	D9	D11	D7	D1		
I5																										
I4																										
I15																										
I2																										
I18																										
I12																										
I10																										
I13																										
I8																										
I9																										
I11																										
I1																										
I3																										
I7																										
I6																										
H1																										
F1																										
G1																										

Fig. 14B

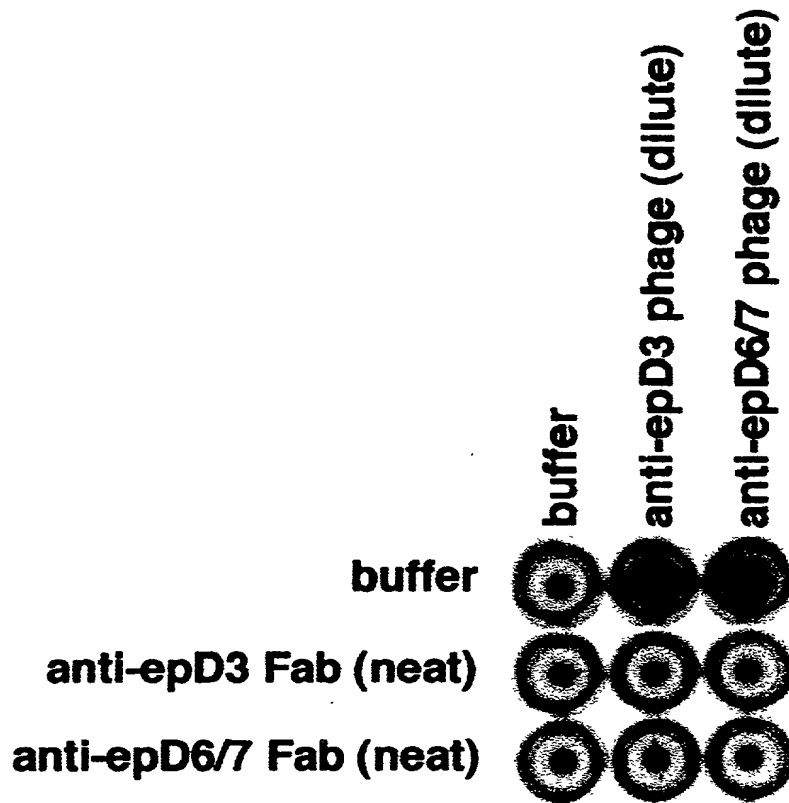


FIG. 15A

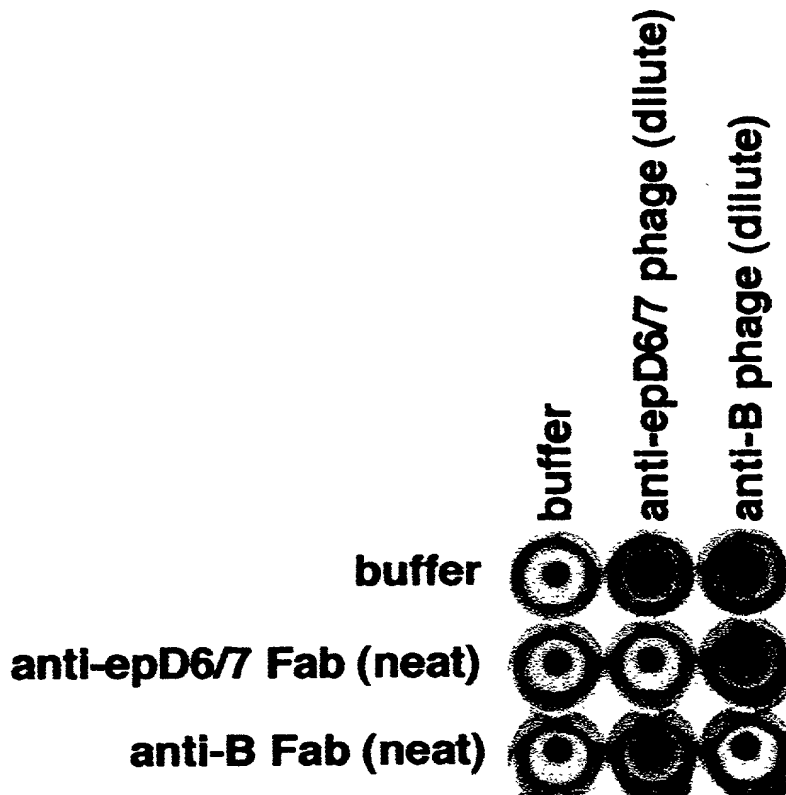


FIG. 15B





anti-epD3 Fab ($\gamma\lambda$)				
anti-epD6/7 Fab ($\gamma\kappa$)	diluted	diluted	neat	neat
developed with:	anti- λ	anti- λ	anti- κ	anti- κ

FIG. 15C

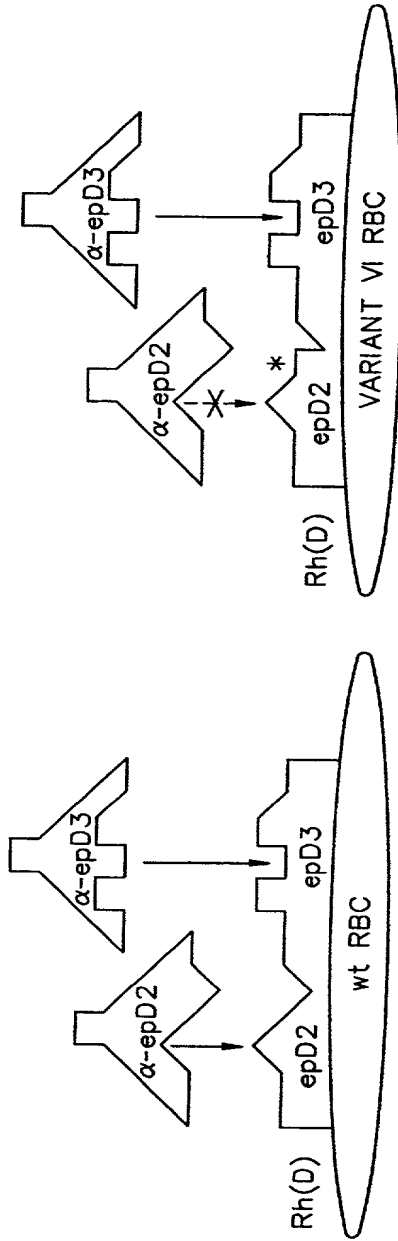


Fig. 16A

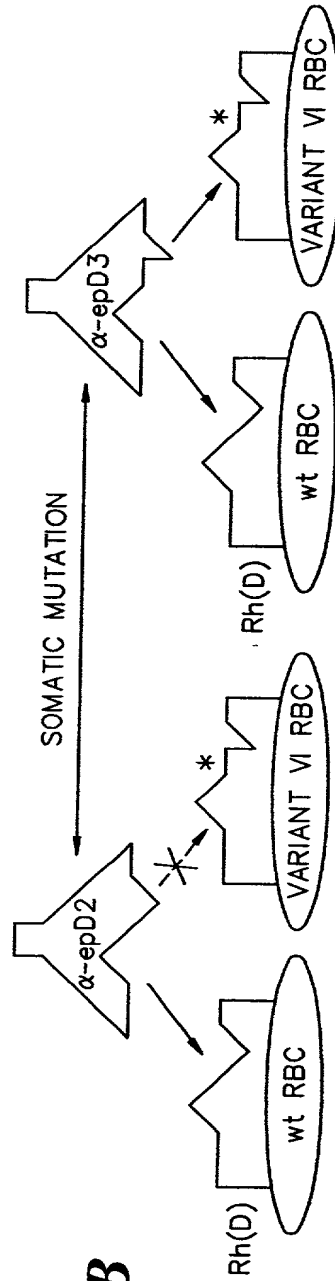


Fig. 16B

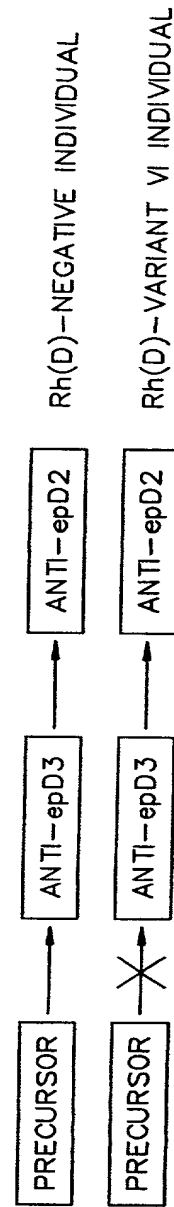


Fig. 16C